



APPEAL BRIEF TRANSMITTAL LETTER

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Re: Appellant: Anatoliy V. Tsyrganovich
Assignee: ZiLOG, Inc.
Title: "Circuit and Method for Reducing East-West Geometry Mismatch
Between the Top and Bottom of a Raster Display"
Serial No.: 10/820,237 Filed: April 5, 2004
Examiner: Angela M. Lie Art Unit: 2163
Atty. Docket No.: ZIL-519-1C

Dear Sir:

Transmitted herewith are the following documents:

- (1) an appeal brief (22 pages);
- (2) non-patent reference (1 page);
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By

Darien K. Wallace

Date of Deposit: September 6, 2007

Respectfully submitted,

Darien K. Wallace
Attorney for Applicants
Reg. No. 53,736
Customer No. 47,713



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant: Anatoliy V. Tsyrganovich

Assignee: ZiLOG, Inc.

Title: "Circuit and Method for Reducing East-West Geometry Mismatch Between the Top and Bottom of a Raster Display"

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APPEAL BRIEF

This Appeal Brief is filed pursuant to 37 CFR § 41.37 in support of the Notice of Appeal filed on July 23, 2007.

I. REAL PARTY IN INTEREST

The real party in interest is the assignee, ZiLOG, Inc., as named in the caption above.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellant which relate to, directly affect or are directly affected by the Board's decision in this appeal.

III. STATUS OF CLAIMS

Claims 55-74 are pending. Claims 55 and 60-74 stand rejected, and claims 56-59 are objected to. The rejected claims, namely, claims 55 and 60-74, are subject to the present appeal.

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IV. STATUS OF AMENDMENTS

An amendment dated May 16, 2007 was filed in response to the Final Office action dated April 25, 2007 ("Office Action"), and the amendment to claim 56 was not entered. No amendment has been filed subsequent to the Office Action.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The following summary pursuant to 37 CFR §41.37(c)(1)(v) is a concise explanation of the claims and is to be read in light of the disclosure. This summary does not limit the claims. (See MPEP §1206).

Raster display systems are used in a variety of applications, such as televisions and computer displays. A raster display system typically includes an electron gun that generates and accelerates an electron beam towards a deflection system. The deflection system deflects the beam horizontally and/or vertically. The deflection system uses a horizontal sawtooth signal to generate a signal to horizontally deflect the beam. However, using a horizontal sawtooth signal produces a distorted raster, as shown in figure 2C (reproduced below).

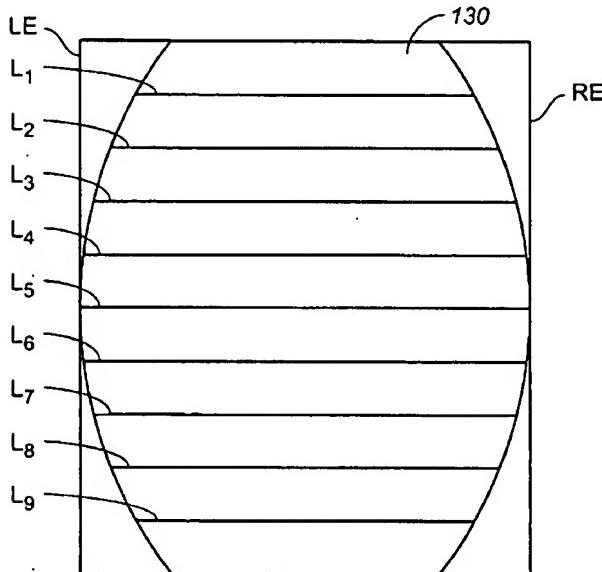


FIG._ 2C

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A correction signal is used to compensate for errors in the raster introduced by the horizontal sawtooth signal. Figure 3B (reproduced below) shows discontinuous portions 330 in a horizontal correction signal CS2 that creates distorted signal portions 331 and 333 in an amplifier output.

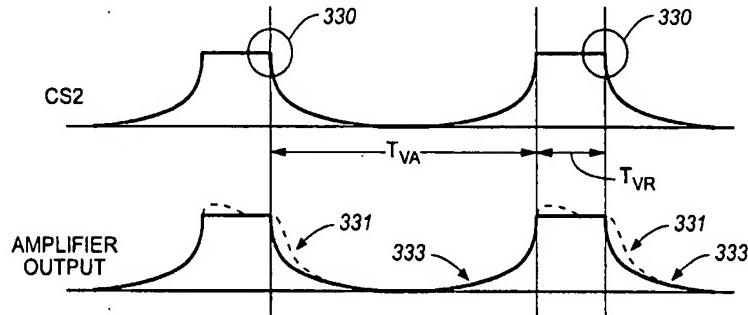


FIG.. 3B

The distorted portions cause the top part of the screen to extend beyond the intended boundaries of the screen as shown in the figure 3C, reproduced below.

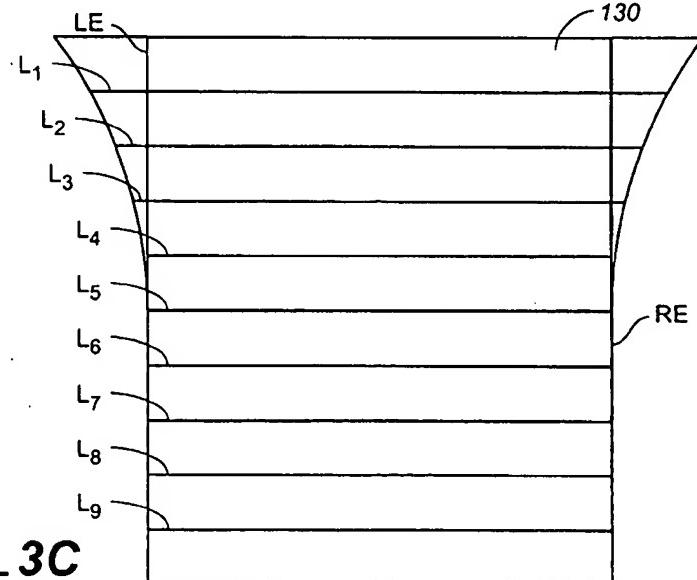


FIG.. 3C

An embodiment of Appellant's novel system is illustrated in figure 4 (replicated below) that avoids distortions in the correction signal.

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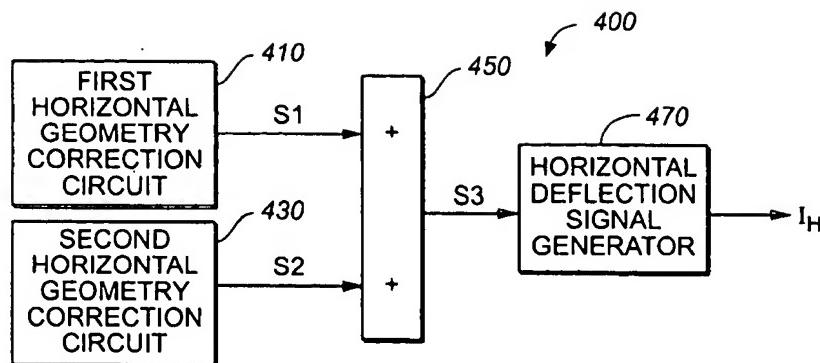


FIG._4

In one aspect, horizontal deflection generator circuit 400 generates parabolic portion 510 and undefined portion 520 shown in figure 5 (reproduced below).

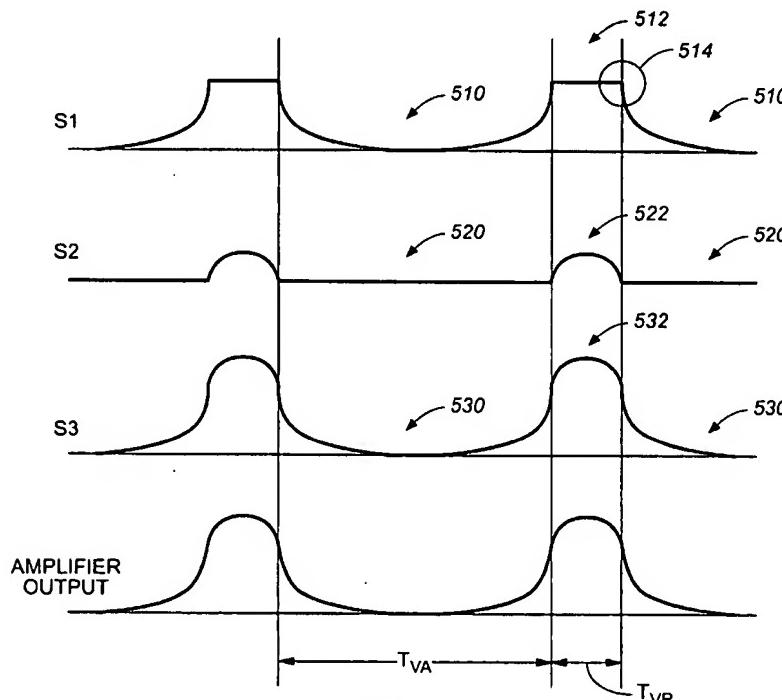


FIG._5

When signal components 510 and 520 are summed together, the resulting correction signal S3 has no discontinuities. The resulting amplifier output based on the correction signal has no distortions arising from discontinuities in the correction signal S3. Accordingly, distortions such as those shown in figure 3C above are not introduced.

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A. Independent Claim 55

Independent claim 55 recites generating a sawtooth signal having an amplitude. (Specification, paragraphs [0037]-[0038] and figure 4) A correction signal with no discontinuities is generated, wherein the correction signal has a vertical retrace time t_{VR} and a vertical active time t_{VA} . (Specification, paragraphs [0040] and [0041] and figure 5) The amplitude of the sawtooth signal is modulated using the correction signal to generate a deflection signal. (Specification, paragraph [0041]). The deflection signal is amplified to generate a deflection current signal that is not distorted when the correction signal transitions from the vertical retrace time t_{VR} to the vertical active time t_{VA} . (Specification, paragraph [0041] and figure 5).

B. Independent Claim 62

Claim 62 recites a horizontal deflection generator and a means for modulating the amplitude of a horizontal sawtooth signal. The horizontal deflection generator has a circuit that generates the horizontal sawtooth signal. (Specification, paragraphs [0037]-[0038] and figure 4). The means for modulating uses a horizontal correction signal to generate a horizontal deflection current signal. (Specification, paragraph [0041]) The horizontal correction signal has no discontinuities (Specification, paragraphs [0040] and [0041] and figure 5) and has a vertical active time t_{VA} and a vertical retrace time t_{VR} . The horizontal deflection current signal is not distorted after a transition from the vertical retrace time t_{VR} to the vertical active time t_{VA} . (Specification, paragraph [0041] and figure 5).

C. Independent Claim 72

Claim 72 recites a horizontal deflection generator and a means for modulating the amplitude of a horizontal sawtooth signal. The horizontal deflection generator has a circuit that generates the horizontal sawtooth signal. (Specification, paragraphs [0037]-[0038] and figure 4) The means for modulating

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uses a horizontal correction signal to generate a horizontal deflection current signal. (Specification, paragraph [0041]) The horizontal correction signal does not have any discontinuities. (Specification, paragraphs [0040] and [0041] and figure 5)

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

- A. Whether claims 55 and 61 are unpatentable under 35 U.S.C. §102(b) over Jackson et al. (U.S. Patent No. 5,475,286).
- B. Whether Claims 60, 62-67, 69-72 and 74 are unpatentable under 35 U.S.C. § 103(a) over Jackson et al. in view of George (U.S. Patent No. 5,648,703).
- C. Whether Claims 68 and 73 are unpatentable under 35 U.S.C. §103(a) over Jackson in view of George and further in view of Pspice (<http://www.orcad.com/pspicead.aspx>)

VII. ARGUMENT

A. Claims 55 and 61 are patentable over Jackson

Claims 55 and 61 are rejected under 35 U.S.C. § 102(b) as being anticipated by Jackson et al. (U.S. Patent No. 5,475,286) (hereafter “Jackson”). (Office Action, page 2, lines 16-17).

Claim 55 recites:

“generating a sawtooth signal, wherein the sawtooth signal has an amplitude;

generating a correction signal with no discontinuities, wherein the correction signal has a vertical retrace time t_{VR} and a vertical active time t_{VA} ;

modulating the amplitude of the sawtooth signal using the correction signal to generate a deflection signal; and

amplifying the deflection signal to generate a deflection current signal, wherein the deflection current signal is not distorted when the correction signal transitions from the vertical retrace time t_{VR} to the vertical active time t_{VA} ” (emphasis added).

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Jackson does not form the basis for a valid rejection under § 102(b) because Jackson does not disclose all of the limitations of claim 55. Specifically, Jackson discloses neither (i) a correction signal with no discontinuities, nor (ii) a deflection current signal that is not distorted when a correction signal transitions from a vertical retrace time to a vertical active time. The Examiner states that figure 3, part F, of Jackson discloses a correction signal that has no discontinuities. (Office Action, page 2, lines 20-21). Appellant respectfully disagrees that the signal depicted in figure 3, part F, is a correction signal. Jackson discloses using a periodic asymmetrical parabola (waveform B of figure 5) rather than using the waveform of figure 3, part F, generally to correct the distortion in the raster shown in part C of figure 2. Jackson repeatedly discloses that use of an asymmetrical parabola could generally correct an over-corrected raster shown in figure 2, part C:

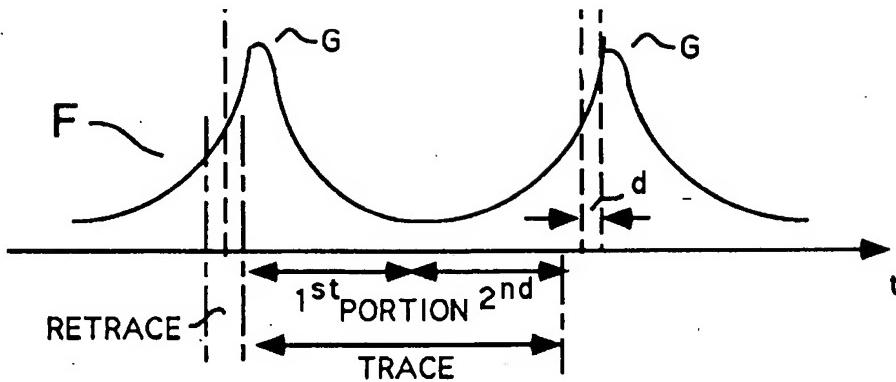
"vertical rate parabolic correction produces a corrected, generally rectangular raster R. The distorted raster D is symmetrically distorted about the vertical center of the raster. A symmetrical correction modulation signal, for example a vertical rate parabola P, will provide symmetrical deflection width correction to produce the rectangular raster R" (emphasis added) (Jackson, col. 7, lines 15-21).

"Deflection amplitude correction with the symmetrical parabola P of FIG. 2A will result in over correction ΔL at the top of the raster as shown in FIG. 2C. Thus an asymmetrical correction signal is required, which must provide differing amounts of correction in the first and second portions of the correction signal" (emphasis added) (Jackson, col. 7, lines 26-31).

"Waveform B of FIG. 5 depicts the East-West vertical rate parabolic waveform at the terminal point B subject to asymmetrical shaping due to circuit 300" (emphasis added) (Jackson, col. 8, lines 47-50).

The Examiner identifies the waveform of figure 3, part F, as a correction signal (reproduced below) (Office Action, page 2, lines 20-21).

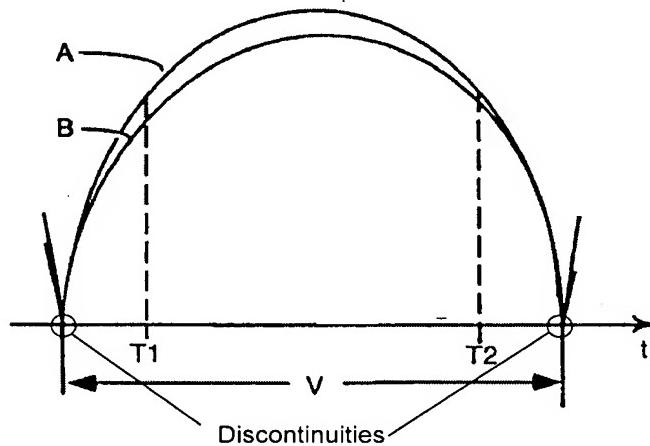
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However, contrary to the Examiner's position, Appellant submits that the waveform of figure 3, part F, alone is not used to correct the distorted raster D of figure 2, part A, because it would not correct the distortion that is symmetrically distorted about the vertical center of the raster. Rather, the use of waveform of figure 3, part F, alone appears to have an undesirable and opposite effect in that it would overcorrect rows close to the top and bottom of the raster (because of amplitude peaks near the retrace periods) and under-correct rows towards the middle of the raster (because of the low amplitude near the center of the trace period).

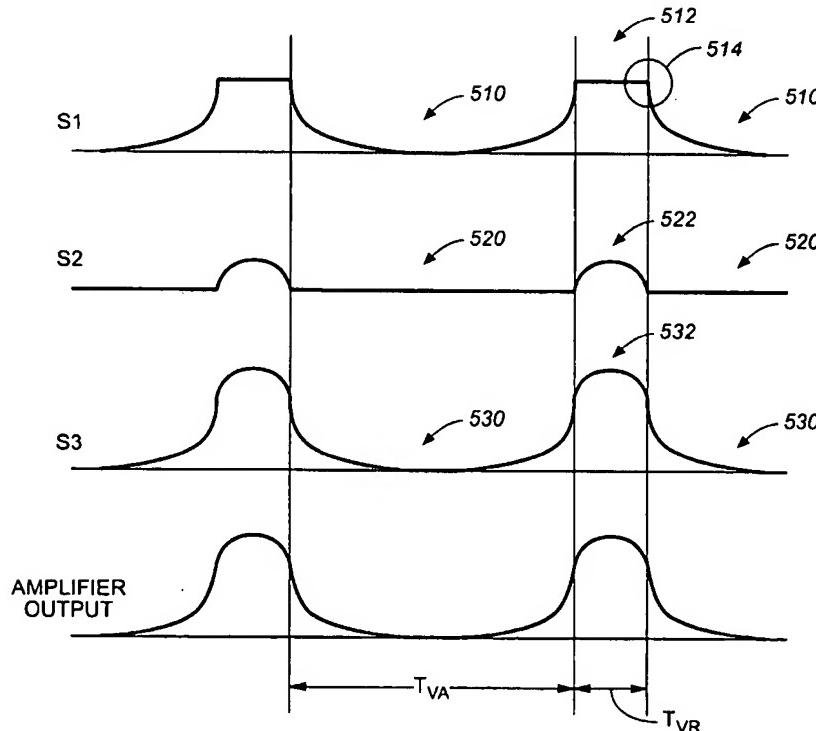
Figure 5 (reproduced below) of Jackson shows an asymmetrical parabolic correction signal having discontinuities. Appellant has circled the discontinuities in the reproduced version of figure 5.

FIGURE 5



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Figure 5 of Appellant's specification is reproduced below and shows an example of a discontinuity 514.



The specification explains discontinuity 514 at paragraph [0038] as follows:

[0038] As explained above, using first horizontal correction signal component S1 to modulate the amplitude of a horizontal sawtooth signal is undesirable since there is a discontinuity 514 between undefined portion 512 and parabolic portions 510. In particular, when first horizontal correction signal component S1 is amplified, discontinuity 514 causes the signal output from the amplifier to be distorted. As a result, horizontal deflection current signal I_H will be distorted resulting in an east-west geometry mismatch between the top and bottom of a raster display (as shown in FIG. 3C)."
(emphasis added)

Appellant respectfully submits that Jackson does not disclose "the deflection current signal is not distorted when the correction signal transitions from the vertical retrace time t_{VR} to the vertical active time t_{VA} " (emphasis added) of claim 55. The Examiner states that Jackson discloses "the deflection current signal is not distorted when the correction signal transitions from the vertical

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retrace time t_{VR} to the vertical active time t_{VA} " by citing column 1, lines 66-67, and column 2, lines 1-2, of Jackson (Office Action, page 3, lines 3-4). The Examiner finds that Jackson discloses "the deflection current signal is not distorted when the correction signal transitions from the vertical retrace time t_{VR} to the vertical active time t_{VA} " by implication because "any existing distortion in the raster (deflection current) is corrected, the current also can not be distorted in the points where the signal transitions" (Office Action, page 3, lines 1-5). Apparently, the Examiner is arguing that the absence of any distortion in the raster implies that the correction signal used to generate the raster has no distortion when the correction signal transitions from the vertical retrace time to the vertical active time. Appellant respectfully submits that Jackson's disclosure of a generally corrected raster is not equivalent to a disclosure that the deflection current signal is not distorted when the correction signal transitions from the vertical retrace time to the vertical active time. Jackson does not disclose that the raster is perfectly rectangular but rather discloses that "asymmetrical pincushion distortion is generally corrected" (emphasis added) (col. 2, lines 1-2) and "vertical rate parabolic correction produces a corrected, generally rectangular raster R" (emphasis added) (col. 7, lines 15-16). Discontinuities are clearly present in the correction signal of figure 5 of Jackson and those discontinuities could cause distortions of a resulting deflection current signal.

Accordingly, Jackson discloses neither (i) a correction signal with no discontinuities, nor (ii) a deflection current signal that is not distorted when the correction signal transitions from the vertical retrace time to the vertical active time. Because Jackson does not disclose all of the elements of claim 55, Jackson does not form the basis for a valid § 102(b) rejection.

Claim 61 depends from claim 55 and is allowable for at least the same reasons as pertain to claim 55. Reversal of the §102(b) rejections of claims 55 and 61 is requested.

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B. Claims 60, 62-67, 69-72 and 74 are patentable over Jackson in view of George

Claims 60, 62-67, 69-72 and 74 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Jackson in view of George (U.S. Patent No. 5,648,703) (hereafter "George") (Office Action, page 3, lines 18-20).

As is well known, to establish a *prima facie* case of obviousness, the Examiner must demonstrate three criteria. The MPEP § 2142 states:

"To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the reference (or references when combined) must teach or suggest all the claimed limitations." MPEP § 2142 (emphasis added).

1. Claims 60, 62, and 72

Dependent claim 60 incorporates the following limitations of independent claim 55: "generating a correction signal with no discontinuities, wherein the correction signal has a vertical retrace time t_{VR} and a vertical active time t_{VA} . . . generate a deflection current signal, wherein the deflection current signal is not distorted when the correction signal transitions from the vertical retrace time t_{VR} to the vertical active time t_{VA} " (emphasis added).

Independent claim 62 recites, "the horizontal correction signal has no discontinuities, wherein the horizontal correction signal has a vertical active time t_{VA} and a vertical retrace time t_{VR} , and wherein the horizontal deflection current signal is not distorted after a transition from the vertical retrace time t_{VR} to the vertical active time t_{VA} " (emphasis added).

Independent claim 72 recites, "generate a horizontal deflection current signal, wherein the horizontal correction signal does not have any discontinuities" (emphasis added).

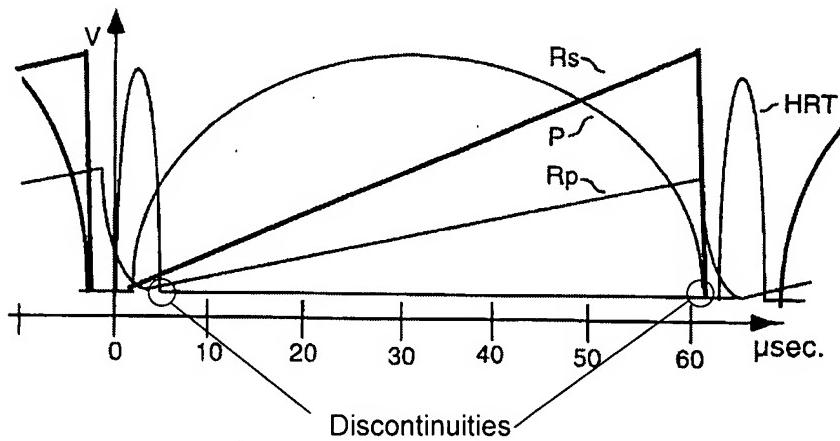
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(i) None of the references relied upon by the Examiner teaches or suggests all elements of claims 55, 62, and 72

The combination of Jackson and George does not teach all limitations of base claims 55, 62, and 72. As explained above in section A, Jackson teaches neither (i) generating a correction signal with no discontinuities nor (ii) a deflection current signal that is not distorted when the correction signal transitions from the vertical retrace time to the vertical active time.

George also does not teach either (i) generating a correction signal with no discontinuities, or (ii) a deflection current signal that is not distorted when or after the correction signal transitions from the vertical retrace time to the vertical active time. Rather, George teaches a correction signal having discontinuities. Each of figures 3A, 3B, and 4A (reproduced below) of George shows a parabolic correction waveform P having discontinuities. Appellant has circled the discontinuities in the reproduced versions of figures 3A, 3B and 4A.

FIG. 3A



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FIG. 3B

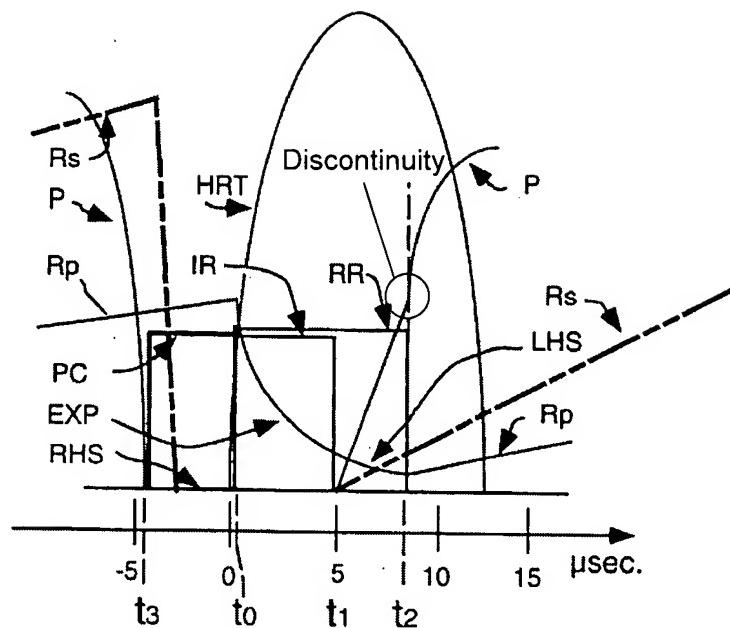
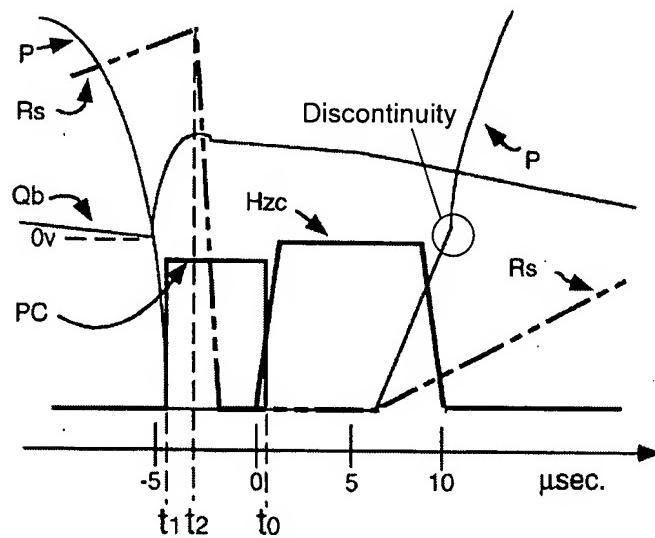


FIG. 4A



George does not teach or suggest that the deflection current signal is not distorted when or after the correction signal transitions from the vertical retrace time to the vertical active time. Rather, discontinuities in the correction signals could likely cause distortions of a resulting deflection current signal.

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(ii) There is no motivation to modify the teachings of Jackson or George to arrive at all limitations of claims 55, 62, and 72

There would be no motivation to modify the teachings of Jackson or George to arrive at all limitations of claims 55, 62 and 72. There must be actual evidence of a suggestion to modify a prior art reference, and the suggestion to modify the prior art must be clear and particular. *In re Dembicza*k, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999). Prior art must be considered in its entirety, including disclosures that teach away from the claims. MPEP 2141.02 (citing *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984)). Appellant respectfully submits that the Examiner has not provided a motivation to modify the teachings of Jackson or George to arrive at either (i) generating a correction signal with no discontinuities or (ii) a deflection current signal that is not distorted when or after the correction signal transitions from the vertical retrace time to the vertical active time. Rather, each of Jackson and George teaches away from generating a correction signal with no discontinuities because each of Jackson and George teaches correction signals having discontinuities. Neither Jackson nor George even mentions whether a deflection current signal is or is not distorted when or after the correction signal transitions from the vertical retrace time to the vertical active time. Rather, because correction signals taught by both Jackson and George have clear discontinuities, a deflection current signal derived from the correction signal is likely distorted.

Accordingly, at least because (i) the combination of Jackson and George does not teach all limitations of claims 60, 62 and 72, and (ii) there is no motivation to modify Jackson or George to arrive at all limitations of claims 60, 62 and 72, Jackson and George do not form the basis for a valid § 103(a) rejection.

2. Claims 63-67, 69-71, and 74

Claims 63-67, 69-71, and 74 depend directly or indirectly from one of base

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claims 55, 62 and 72 and are allowable for at least the same reasons as pertain to one of base claims 55, 62 and 72.

Reversal of the §103(a) rejection of claims 60, 62-67, 69-72 and 74 is requested.

C. Claims 68 and 73 are patentable over Jackson in view of George and further in view of Pspice.

Claims 68 and 73 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Jackson in view of George and further in view of Pspice (<http://www.orcad.com/pspicead.aspx>) ("Pspice") (Office Action, page 6, lines 16-18).

Claim 68 incorporates the following limitation of base claim 62: "horizontal correction signal has no discontinuities . . . wherein the horizontal deflection current signal is not distorted after a transition from the vertical retrace time t_{VR} to the vertical active time t_{VA} ." Claim 73 incorporates the following limitation of base claim 72: "horizontal correction signal does not have any discontinuities."

The 3-way combination of Jackson, George and Pspice does not teach all of the elements of the base claims 62 and 72. As shown earlier, neither Jackson nor George teaches all elements of base claims 62 and 72, and there is no motivation to modify the teachings of Jackson or George to arrive at all of the limitations of claims 62 or 72.

Pspice teaches neither (i) a correction signal having no discontinuities nor (ii) a deflection current signal that is not distorted after a transition from the vertical retrace time to the vertical active time. Moreover, Pspice does not provide any motivation to modify Jackson or George to arrive at all of the limitations of base claims 62 and 72.

The combination of the teachings of Jackson, George and Pspice does not form the basis for a valid rejection of claims 68 and 73 under § 103(a) at least because (i) the references when combined do not teach all limitations of base

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claims 62 and 72, and (ii) there is no motivation to modify the teachings of any of Jackson, George or Pspice to arrive at all of the limitations of claims 68 and 73.

Reversal of the §103(a) rejection of claims 68 and 73 is requested.

VIII. CONCLUSION

The enclosed remarks are not intended to be an exhaustive enumeration of all distinctions between any cited references and the claims. The distinctions identified and discussed are to illustrate at least one difference between each claim and the cited references.

At least for the reasons set forth above, Appellant respectfully requests that the Appeal Board reverse the Examiner's rejections of claims 55 and 60-74. Accordingly, because all pending claims are allowable (namely, claims 55-74), Appellant respectfully requests that all pending claims be allowed.

A check is enclosed for the \$500 Appeal Brief fee required under 37 CFR §41.37(a)(2).

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By 
Darien K. Wallace

Date of Deposit: September 6, 2007

Respectfully submitted,



Darien K. Wallace
Attorney for Appellant
Reg. No. 53,736
Customer No. 47,713

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IX. CLAIMS APPENDIX

1-54. (Canceled)

55. (previously presented) A method, comprising:

generating a sawtooth signal, wherein the sawtooth signal has an amplitude;

generating a correction signal with no discontinuities, wherein the correction signal has a vertical retrace time t_{VR} and a vertical active time t_{VA} ;

modulating the amplitude of the sawtooth signal using the correction signal to generate a deflection signal; and

amplifying the deflection signal to generate a deflection current signal, wherein the deflection current signal is not distorted when the correction signal transitions from the vertical retrace time t_{VR} to the vertical active time t_{VA} .

56. (previously presented) The method of claim 55, wherein the generating the correction signal is performed by combining a first correction signal component with a second correction signal component.

57. (previously presented) The method of claim 56, wherein the first correction signal component has a constant amplitude during the vertical active time t_{VA} .

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58. (previously presented) The method of claim 56, wherein the second correction signal component has a constant amplitude during the vertical retrace time t_{VR} .

59. (previously presented) The method of claim 56, wherein the first correction signal component has an amplitude, and wherein the amplitude of the first correction signal component varies parabolically.

60. (previously presented) The method of claim 55, wherein the sawtooth signal is a horizontal sawtooth signal, and wherein the correction signal is a horizontal correction signal.

61. (previously presented) The method of claim 55, wherein the generating the correction signal comprises generating a higher-order signal.

62. (previously presented) A horizontal deflection generator, comprising:
a circuit that generates a horizontal sawtooth signal having an amplitude;
and
means for modulating the amplitude of the horizontal sawtooth signal using a horizontal correction signal to generate a horizontal deflection current signal, wherein the horizontal correction signal has no discontinuities, wherein the horizontal correction signal has a vertical active time t_{VA} and a vertical retrace

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time t_{VR} , and wherein the horizontal deflection current signal is not distorted after a transition from the vertical retrace time t_{VR} to the vertical active time t_{VA} .

63. (previously presented) The horizontal deflection generator of claim 62, wherein the horizontal correction signal is a continuous signal.

64. (previously presented) The horizontal deflection generator of claim 62, wherein the means comprises an amplifier, wherein the means generates a modulated horizontal sawtooth signal, and wherein the amplifier generates the horizontal deflection current signal by amplifying the modulated horizontal sawtooth signal.

65. (previously presented) The horizontal deflection generator of claim 64, wherein the amplifier has a limited frequency bandwidth.

66. (previously presented) The horizontal deflection generator of claim 62, wherein the horizontal deflection generator is part of a raster display system.

67. (previously presented) The horizontal deflection generator of claim 62, wherein the horizontal deflection generator is implemented on a single integrated circuit device.

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68. (previously presented) The horizontal deflection generator of claim 62, wherein the horizontal deflection generator is implemented in software.
69. (previously presented) The method of claim 55, wherein a circuit generates the correction signal, and wherein the circuit includes a level shifter.
70. (previously presented) The method of claim 69, wherein the circuit includes an inverter.
71. (previously presented) The method of claim 69, wherein the circuit includes a gain controller.
72. (previously presented) A horizontal deflection generator, comprising:
a circuit that generates a horizontal sawtooth signal having an amplitude;
and
means for modulating the amplitude of the horizontal sawtooth signal using a horizontal correction signal to generate a horizontal deflection current signal, wherein the horizontal correction signal does not have any discontinuities.
73. (previously presented) The horizontal deflection generator of claim 72, wherein the horizontal deflection generator is implemented in software.

Appellant: Tsyrganovich

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Filing Date: April 5, 2004

Docket No.: ZIL-519-1C

74. (previously presented) The horizontal deflection generator of claim 72, wherein the means comprises an amplifier, wherein the means generates a modulated horizontal sawtooth signal, and wherein the amplifier generates the horizontal deflection current signal by amplifying the modulated horizontal sawtooth signal.

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X. EVIDENCE APPENDIX

No evidence has been submitted pursuant to 37 C.F.R. §§ 1.130, 1.131 or 1.132. No affidavit or declaration has been submitted under § 1.130 to disqualify a commonly owned patent or a published application as prior art. No affidavit or declaration of a prior invention has been submitted under § 1.131. No affidavit or declaration traversing rejections or objections has been submitted under § 1.132. No such evidence was entered by the Examiner and relied upon by Appellant in this appeal.

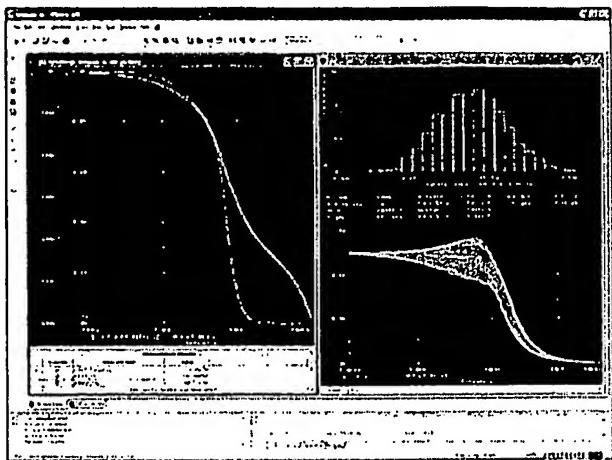
In the rejections that are to be reviewed in this appeal, the Examiner has not relied upon any non-patent documents other than the Pspice reference (which is attached) first cited by the Examiner in an Office action dated January 18, 2006.

XI. RELATED PROCEEDINGS APPENDIX

No decision has yet been rendered by a court or the Board in this or any related proceeding.

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